CHAPTER 4A. GENERAL

Section 4A.01 Types

Support:

The following types and uses of highway traffic signals are discussed in Part 4: traffic control signals; pedestrian signals; emergency-vehicle traffic control signals; traffic control signals for one-lane, two-way facilities; traffic control signals for freeway entrance ramps; traffic control signals for movable bridges; lane-use control signals; flashing beacons; and in-roadway lights.

The "Signal Design Manual" contains further information regarding traffic control signal design. This document can be obtained from the Maryland State Highway Administration's Office of Traffic & Safety, Traffic Engineering Design Division (TEDD) at the address shown on Page i. SHA

Section 4A.02 Definitions Relating to Highway Traffic Signals

Standard:

The following technical terms, when used in Part 4, shall be defined as follows:

1. **Accessible Pedestrian Signal—a device that communicates information about pedestrian timing in nonvisual format such as audible tones, verbal messages, and/or vibrating surfaces.**
2. **Active Grade Crossing Warning System—the flashing-light signals, with or without warning gates, together with the necessary control equipment used to inform road users of the approach or presence of trains at highway-rail grade crossings or highway-light rail transit grade crossings.**
3. **Actuated Operation—a type of traffic control signal operation in which some or all signal phases are operated on the basis of actuation.**
4. **Actuation—initiation of a change in or extension of a traffic signal phase through the operation of any type of detector.**
5. **Approach—all lanes of traffic moving towards an intersection or a midblock location from one direction, including any adjacent parking lane(s).**

SHA-5a. Approach grade—the percent grade of the roadway approaching the signal, expressed as: (a) A positive number for an uphill grade; and (b) A negative number for a downhill grade. SHA

SHA-5b. Approach speed—the higher of the 85th percentile speed determined when vehicles are not slowed by a yellow or red signal indication, traffic, weather, or other conditions or the posted speed limit, in kilometers per hour (km/h) or miles per hour (mph). SHA

6. **Average Day—a day representing traffic volumes normally and repeatedly found at a location, typically a weekday when volumes are influenced by employment or a weekend day when volumes are influenced by entertainment or recreation.**
7. **Backplate—see Signal Backplate.**
8. **Beacon—a highway traffic signal with one or more signal sections that operates in a flashing mode.**
9. **Conflict Monitor—a device used to detect and respond to improper or conflicting signal indications and improper operating voltages in a traffic controller assembly.**
10. **Controller Assembly—a complete electrical device mounted in a cabinet for controlling the operation of a highway traffic signal.**
11. **Controller Unit—that part of a controller assembly that is devoted to the selection and timing of the display of signal indications.**

SHA-11a. Countdown Pedestrian Signal—a signal face displaying interval countdown in order to inform pedestrians of the number of seconds remaining in the pedestrian change interval. SHA

12. **Crosswalk—(a) that part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs or in the absence of curbs, from the edges of the traversable roadway, and in the absence of a sidewalk on one side of the roadway, the part of a roadway included within the extension of the lateral lines of the sidewalk at right angles to the centerline; (b) any portion of a roadway at an intersection or elsewhere distinctly indicated as a pedestrian crossing by lines on the surface, which may be supplemented by a contrasting pavement texture, style, or color.**
13. **Cycle Length—the time required for one complete sequence of signal indications.**
14. **Dark Mode—the lack of all signal indications at a signalized location. (The dark mode is most commonly associated with power failures, ramp meters, beacons, and some movable bridge signals.)**

SHA-14a. Deceleration rate—the constant and uniform rate, expressed in meter per second per second (m/sec^2) or feet per second per second (ft/sec^2), at which motor vehicles typically stop. SHA

15. **Detector—a device used for determining the presence or passage of vehicles or pedestrians.**

16. **Dual-Arrow Signal Section—a type of signal section designed to include both a yellow arrow and a green arrow.**
17. **Emergency Vehicle Traffic Control Signal—a special traffic control signal that assigns the right-of-way to an authorized emergency vehicle.**
18. **Flasher—a device used to turn highway traffic signal indications on and off at a repetitive rate of approximately once per second.**
19. **Flashing—an operation in which a highway traffic signal indication is turned on and off repetitively.**
20. **Flashing Mode—a mode of operation in which at least one traffic signal indication in each vehicular signal face of a highway traffic signal is turned on and off repetitively.**
21. **Full-Actuated Operation—a type of traffic control signal operation in which all signal phases function on the basis of actuation.**

SHA-21a. Heavy truck—a single unit truck with three or more axles, a tractor-trailer, or a tractor-semitrailer combination. Gross vehicular weight exceeds 5 tons. SHA

22. **Highway Traffic Signal—a power-operated traffic control device by which traffic is warned or directed to take some specific action. These devices do not include signals at toll plazas, power-operated signs, illuminated pavement markers, warning lights (see Section 6F.78), or steady-burning electric lamps.**
23. **In-Roadway Lights—a special type of highway traffic signal installed in the roadway surface to warn road users that they are approaching a condition on or adjacent to the roadway that might not be readily apparent and might require the road users to slow down and/or come to a stop.**
24. **Intersection—(a) the area embraced within the prolongation or connection of the lateral curb lines, or if none, the lateral boundary lines of the roadways of two highways that join one another at, or approximately at, right angles, or the area within which vehicles traveling on different highways that join at any other angle might come into conflict; (b) the junction of an alley or driveway with a roadway or highway shall not constitute an intersection.**
25. **Intersection Control Beacon—a beacon used only at an intersection to control two or more directions of travel.**
26. **Interval—the part of a signal cycle during which signal indications do not change.**
27. **Interval Sequence—the order of appearance of signal indications during successive intervals of a signal cycle.**
28. **Lane-Use Control Signal—a signal face displaying signal indications to permit or prohibit the use of specific lanes of a roadway or to indicate the impending prohibition of such use.**

SHA-28a. LED—a light-emitting diode (LED) is a semiconductor device that emits visible light when an electric current passes through it, which is used for traffic control devices in lieu of incandescent bulbs or fiber optics. SHA

29. **Lens—see Signal Lens.**
30. **Louver—see Signal Louver.**
31. **Major Street—the street normally carrying the higher volume of vehicular traffic.**
32. **Malfunction Management Unit—same as Conflict Monitor.**
33. **Minor Street—the street normally carrying the lower volume of vehicular traffic.**
34. **Movable Bridge Resistance Gate—a type of traffic gate, which is located downstream of the movable bridge warning gate, that provides a physical deterrent to vehicle and/or pedestrian traffic when placed in the appropriate position.**
35. **Movable Bridge Signal—a highway traffic signal installed at a movable bridge to notify traffic to stop during periods when the roadway is closed to allow the bridge to open.**
36. **Movable Bridge Warning Gate—a type of traffic gate designed to warn, but not primarily to block, vehicle and/or pedestrian traffic when placed in the appropriate position.**
37. **Pedestrian Change Interval—an interval during which the flashing UPRAISED HAND (symbolizing DONT WALK) signal indication is displayed. When a verbal message is provided at an accessible pedestrian signal, the verbal message is "wait."**
38. **Pedestrian Clearance Time—the time provided for a pedestrian crossing in a crosswalk, after leaving the curb or shoulder, to travel to the far side of the traveled way or to a median.**
39. **Pedestrian Signal Head—a signal head, which contains the symbols WALKING PERSON (symbolizing WALK) and UPRAISED HAND (symbolizing DONT WALK), that is installed to direct pedestrian traffic at a traffic control signal.**
40. **Permissive Mode—a mode of traffic control signal operation in which, when a CIRCULAR GREEN signal indication is displayed, left or right turns are permitted to be made after yielding to pedestrians and/or oncoming traffic.**

41. **Platoon—a group of vehicles or pedestrians traveling together as a group, either voluntarily or involuntarily, because of traffic signal controls, geometrics, or other factors.**
42. **Preemption Control—the transfer of normal operation of a traffic control signal to a special control mode of operation.**
43. **Pretimed Operation—a type of traffic control signal operation in which none of the signal phases function on the basis of actuation.**
44. **Priority Control—a means by which the assignment of right-of-way is obtained or modified.**
45. **Protected Mode—a mode of traffic control signal operation in which left or right turns are permitted to be made when a left or right GREEN ARROW signal indication is displayed.**
46. **Pushbutton—a button to activate pedestrian timing.**
47. **Pushbutton Locator Tone—a repeating sound that informs approaching pedestrians that they are required to push a button to actuate pedestrian timing and that enables pedestrians who have visual disabilities to locate the pushbutton.**
48. **Ramp Control Signal—a highway traffic signal installed to control the flow of traffic onto a freeway at an entrance ramp or at a freeway-to-freeway ramp connection.** SHA
49. **Ramp Meter—see Ramp Control Signal.**

SHA-49a. Reaction time—the total time, in seconds, required by a typical driver to perceive that a traffic control signal indication has changed from green to yellow, decide what driving action to take in response to that change, and to initiate that action.

51. **Right-of-Way (Assignment)—the permitting of vehicles and/or pedestrians to proceed in a lawful manner in preference to other vehicles or pedestrians by the display of signal indications.**
52. **Roadway Network—a geographical arrangement of intersecting roadways.**
53. **Semiactuated Operation—a type of traffic control signal operation in which at least one, but not all, signal phases function on the basis of actuation.**
54. **Separate Left-Turn Signal Face—a signal face for controlling a left-turn movement that sometimes displays a different color of circular signal indication than the adjacent through signal faces display.**
55. **Shared Left-Turn Signal Face—a signal face, for controlling both a left turn movement and the adjacent through movement, that always displays the same color of circular signal indication that the adjacent through signal face or faces display.**
56. **Signal Backplate—a thin strip of material that extends outward from and parallel to a signal face on all sides of a signal housing to provide a background for improved visibility of the signal indications.**
57. **Signal Coordination—the establishment of timed relationships between adjacent traffic control signals.**
58. **Signal Face—that part of a traffic control signal provided for controlling one or more traffic movements on a single approach.**
59. **Signal Head—an assembly of one or more signal sections.**
60. **Signal Housing—that part of a signal section that protects the light source and other required components.**
61. **Signal Indication—the illumination of a signal lens or equivalent device.**
62. **Signal Lens—that part of the signal section that redirects the light coming directly from the light source and its reflector, if any.**
63. **Signal Louver—a device that can be mounted inside a signal visor to restrict visibility of a signal indication from the side or to limit the visibility of the signal indication to a certain lane or lanes, or to a certain distance from the stop line.**
64. **Signal Phase—the right-of-way, yellow change, and red clearance intervals in a cycle that are assigned to an independent traffic movement or combination of movements.**
65. **Signal Section—the assembly of a signal housing, signal lens, and light source with necessary components to be used for providing one signal indication.**
66. **Signal System—two or more traffic control signals operating in signal coordination.**
67. **Signal Timing—the amount of time allocated for the display of a signal indication**
68. **Signal Visor—that part of a signal section that directs the signal indication specifically to approaching traffic and reduces the effect of direct external light entering the signal lens.**
69. **Signal Warrant—a threshold condition that, if found to be satisfied as part of an engineering study, shall result in analysis of other traffic conditions or factors to determine whether a traffic control signal or other improvement is justified.**
50. **Red Clearance Interval—an optional interval that follows a yellow change interval and precedes the next conflicting green interval.**
70. **Speed Limit Sign Beacon—a beacon used to supplement a SPEED LIMIT sign.**

71. **Steady (Steady Mode)—the continuous illumination of a signal indication for the duration of an interval, signal phase, or consecutive signal phases.**
72. **Stop Beacon—a beacon used to supplement a STOP sign, a DO NOT ENTER sign, or a WRONG WAY sign.**
73. **Traffic Control Signal (Traffic Signal)—any highway traffic signal by which traffic is alternately directed to stop and permitted to proceed.**

SHA-73a. Traffic control signal monitoring system—a device with one or more motor vehicle sensors working in conjunction with a traffic control signal to produce recorded images of motor vehicles entering an intersection against a red signal. SHA

74. **Vibrotactile Pedestrian Device—a device that communicates, by touch, information about pedestrian timing using a vibrating surface.**
75. **Visibility-Limited Signal Face or Signal Section—a type of signal face or signal section designed (or shielded, hooded, or louvered) to restrict the visibility of a signal indication from the side, to a certain lane or lanes, or to a certain distance from the stop line.**
76. **Walk Interval—an interval during which the WALKING PERSON (symbolizing WALK) signal indication is displayed. When a verbal message is provided at an accessible pedestrian signal, the verbal message is "walk sign."**
77. **Warning Beacon—a beacon used only to supplement an appropriate warning or regulatory sign or marker.**
78. **Yellow Change Interval—the first interval following the green interval during which the yellow signal indication is displayed.**